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PATENT APPLICATION
Do. No. 1482-132

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Barrie Gilbert

Serial No. 09/545,691

Examiner:

Philip Sobutka

Filed: April 7, 2000

Group Art Unit:

2683

For: RF MIXER WITH INDUCTIVE DEGENERATION

Date: February 14, 2002

ATTENTION: Board of Patent Appeals and Interferences
Commissioner of Patents and Trademarks
Washington, DC 20231

I HEREBY CERTIFY THAT THIS CORRESPONDENCE IS BEING DEPOSITED WITH THE UNITED STATES POSTAL SERVICE AS FIRST CLASS MAIL IN AN ENVELOPE ADDRESSED TO:
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ON Aug 9, 2002
J. Mohr

APPEAL BRIEF

This Appeal Brief is in furtherance of the Notice of Appeal mailed in this case on May 9, 2002. Appeal is taken from the Examiner's Final Office Action mailed December 20, 2001 finally rejecting claim 15, and the Advisory Action mailed March 26, 2002 continuing the rejection of claim 15.

The fees required under §1.17(c) and any required petition for extension of time for filing this Brief and fees therefor are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This Brief is transmitted in triplicate.

REAL PARTY IN INTEREST

The present application has been assigned to the following party:

Analog Devices, Inc.
One Technology Way
Norwood, MA 02062

RELATED APPEALS AND INTERFERENCES

The Board's decision in the present Appeal will not directly affect, or be directly affected, or have any bearing on any other appeals or interferences known to the appellant, or to the Applicant's legal representative.

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BOARD OF PATENT APPEALS AND INTERFERENCES

STATUS OF CLAIMS

Claims pending in the application: 2-3, 9-10, 13 and 15-26

Claims drawn to allowable subject matter: 2-3, 9-10, 13 and 16-26.

Claims rejected: 15 (which is finally rejected)

Claims appealed: 15

STATUS OF AMENDMENTS

An Amendment After Final, which rewrote claims 16-23 in independent form, was filed on February 14, 2002. The Advisory Action mailed March 26, 2002 indicates that the proposed amendment would not be entered. However, the Advisory Action also indicates that claims 16-23 are allowed.

SUMMARY

Claim 15 recites an amplifier having two output terminals and two class AB input stages. The first input stage receives a first input signal, and the second input stage receives a second input signal. The input stages are arranged such that each of the input stages drives both of the output terminals responsive to its respective input signal.

ISSUES ON APPEAL

Whether claim 15 is unpatentable under 35 U.S.C. 103(a) based on U.S. Patent No. 5,789,799 to Voinigescu et al. ("Voinigescu") in view of U.S. Patent No. 5,307,512 to Mitzlaff ("Mitzlaff").

ARGUMENT

The present patent application discloses amplifiers having, among other things, several types of input stages that drive two output terminals responsive to a single input signal. An example embodiment of such an input stage is shown in Fig. 15 where transistors Q11, Q12 and Q13 form a class AB input stage that drives terminals 38 and 40 in response to a signal received at input terminal 44.

The invention recited in claim 15 combines two input stages, each of which drives both of the output terminals responsive to its own input signal. An example embodiment of such an amplifier is shown in Fig. 26. In the circuit of Fig. 26, transistors Q1, Q2 and Q3

form a first class AB input stage that drives the output terminals 38 and 40 in response to a first input signal V_{IN1} . Transistors Q4, Q5 and Q6 form a second class AB input stage that drives the output terminals 38 and 40 in response to a second input signal V_{IN2} .

Claim 15 stands under final rejection as being unpatentable under 35 U.S.C. 103(a) based on U.S. Patent No. 5,789,799 to Voinigescu et al. ("Voinigescu") in view of U.S. Patent No. 5,307,512 to Mitzlaff ("Mitzlaff").

Claim 15 reads as follows:

15. An amplifier cell comprising:
first and second input terminals;
first and second output terminals;
first class AB input stage coupled to the first and second output terminals and arranged to drive the first and second output terminals responsive to a first input signal received at the first input terminal; and
a second class AB input stage coupled to the first and second output terminals and arranged to drive the first and second output terminals responsive to a second input signal received at the second input terminal.

In the Office Action mailed December 20, 2001, the Examiner argued that the first and second input terminals recited in claim 15 read on "RF" and "LO" in Fig. 9 of Voinigescu, and that the first and second output terminals read on "IF" (presumably IF- and IF+ in Fig. 9). The Examiner then argues that the first and second input stages, although not class AB stages, read on transistors Q1 and Q3.

This is an unreasonable interpretation of Voinigescu. In the configuration shown in Fig. 9 of Voinigescu, the output of transistor Q3 is provided at its collector (the diagonal line without an arrow head). (See col. 14, lines 33-36.) If transistor Q3 is interpreted as the first input stage in claim 15, then it is only arranged to drive one of the outputs IF-, not both outputs as recited in claim 15.

To establish a *prima facie* case of obviousness, the prior art reference must teach or suggest all the claim limitations. *In re Vaack*, 20 USPQ2d 1438 (Fed. Cir. 1991). Voinigescu does not teach first and second input stages arranged such that both stages drive two output terminals. Nor does Voinigescu provide any suggestion or motivation to provide two input stages in such an arrangement. Furthermore, the Examiner does not allege that Mitzlaff

provides any such suggestion or motivation. Thus, a *prima facie* case of obviousness has not been established.

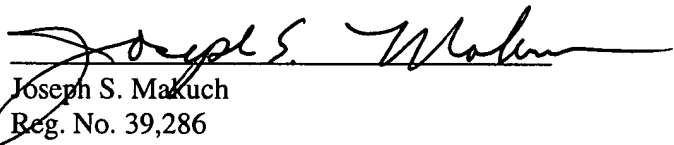
The Examiner further alleges that Mitzlaff provides the motivation to modify Voinigescu to use class AB input stages "for higher efficiency when in FM operation". As discussed above, Voinigescu does not teach two input stages arranged as recited in claim 15, and therefore, cannot serve as a basis for modification according to the teachings of Mitzlaff. Nonetheless, assuming *arguendo* that the Examiner's analysis of Voinigescu is correct, Mitzlaff does not teach the disireability of using any particular type of input stage. Rather, Mitzlaff simply discloses the benefit of *driving an input stage into saturation* regardless of whether the input stage is class A, class AB, etc. (Col. 2, line 62-66.) Thus, Mitzlaff does not provide any suggestion or motivation to combine the references, and a *prima facie* case of obviousness has not been established

CONCLUSION

Applicant requests that the rejection of claim 15 be reversed.

Respectfully submitted,

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APPENDIX

The claims involved with the appeal read as follows:

15. An amplifier cell comprising:
- first and second input terminals;
 - first and second output terminals;
 - first class AB input stage coupled to the first and second output terminals and arranged to drive the first and second output terminals responsive to a first input signal received at the first input terminal; and
 - a second class AB input stage coupled to the first and second output terminals and arranged to drive the first and second output terminals responsive to a second input signal received at the second input terminal.